Abstract

Heavy oil reservoir has a low recovery factor (6-10%) due to the heavy oil has a high viscosity (100 cp – 10000 cp) at reservoir temperature. Cyclic Steam Stimulation also known as Huff and Puff can reduce the viscosity of heavy oil so that the oil mobility increase and the rate of oil production can be increase.

The problems that exist are: first is how much the amount of response oil production after Cyclic Steam Stimulation is, using existing operating data. The second is how much the amount of heat injected in Cyclic Steam Stimulation operation in order to get the optimum benefits. And the third is how much the amount of the response oil production after Cyclic Steam Stimulation is using optimum amount of heat.

The model that used to predict the response production after Cyclic Steam Stimulation is Gozde-Chhina model. Gozde-Chhina model is the development model from Gontijo-Aziz models. Gontijo - Aziz model considering the pressure force and gravity drive. Successful operation of cyclic steam stimulation lies in the optimum operating conditions, the operating conditions that provide additional the lowest steam-oil ratio and highest Net Present Value (NPV).

Calculations on the Rantau Bais field using existing operating data, that the amount of heat injected (H_{inj}) is 4 BBTU, provide results on the well Z#1 give amount of cumulative oil production (N_p) = 10823 bbl, NPV = $ 144,028, and the well Z#2 give N_p = 2708 bbl, NPV = ($ 45,772). Optimization for Rantau Bais field, well Z#1 with Hinj of 2 BBTU gives NPV of $ 160,056 and well Z#2 with Hinj of 0.4 BBTU gives NPV of $ 25,630.